

PSEUDOSPECTRAL METHODS WITH PML FOR NONLINEAR KLEIN-GORDON EQUATIONS

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ABSTRACT

In the talk, we consider the perfectly matched layer (PML) formulations for the nonlinear Klein-Gordon (NKG) equation and the numerical solutions. We shall first review a formulation proposed in the literature and present the limitation of its performance. Then, we shall propose a new simple PML and its numerical discretizations for the NKG. In order to get higher order spatial accuracy, the regularized Bermúdez type absorption functions are proposed. Moreover, it is shown to be insensitive to the PML parameters. Extensions are made to the nonrelativistic limit regime. The talk is based on the work [1].

REFERENCES

- [1] X. Antoine, X. Zhao. *Pseudospectral methods with PML for nonlinear Klein-Gordon equations in classical and non-relativistic regimes*, Journal of Computational Physics 448 (2022), 110728.

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